

Applicant: Stanislaw BODZAK  
Docket No. R.306456  
Preliminary Amdt.

**AMENDMENTS TO THE SPECIFICATION:**

Page 1, please add the following new paragraphs before paragraph [0001]:

[0000.2] CROSS-REFERENCE TO RELATED APPLICATIONS

[0000.4] This application is a 35 USC 371 application of PCT/DE 2004/001719  
filed on July 30, 2004.

[0000.6] BACKGROUND OF THE INVENTION

Please replace paragraph [0001] with the following amended paragraph:

[0001] ~~Prior Art~~ **Field of the Invention**

Please replace paragraph [0002] with the following amended paragraph:

[0002] The present invention is **directed to an improved** ~~based on a fluid pump as~~  
~~generically defined by the preamble to claim 1~~ **of the type employed in fuel injection**  
**systems of an internal combustion engine.**

Please add the following new paragraph after paragraph [0002]:

[0002.5] Description of the Prior Art

Please replace paragraph [0003] with the following amended paragraph:

[0003] A fluid pump of ~~this kind~~ **the type with which this invention is concerned,**  
embodied in the form of a gear pump, is known from DE 196 25 564 A1. This gear pump is  
provided for a fuel injection apparatus of an internal combustion engine and has a housing  
that contains a pump chamber. The pump chamber contains a pair of rotary driven gears that  
mesh with each other along their outer circumference. The gears deliver fuel as a delivery  
medium from an intake chamber connected to a reservoir, along delivery channels formed  
between the circumference of the gears and the circumference walls of the pump chamber, to

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a pressure chamber. The gear pump also has a pressure limiting valve to limit the pressure in the pressure chamber. When a predetermined pressure in the pressure chamber is exceeded, the pressure limiting valve opens a connecting conduit between the pressure chamber and the intake chamber. The pressure limiting valve has a valve piston, which is guided so that it can move inside a bore in a plane perpendicular to the rotation axes of the gears and cooperates with a valve seat. The valve piston is able to move in opposition to the force of a prestressed spring. The pressure limiting valve makes it possible to limit the pressure generated by the gear pump and thus to limit the fuel quantity delivered. Usually, the fluid pump is preceded by a filter through which the aspirated fluid flows or is followed by a filter through which the delivered fuel flows. The fluid pump delivers a varying fluid quantity depending on the degree to which the filter is soiled, a phenomenon that cannot be prevented by the pressure limiting valve.

Page 2, please replace paragraph [0004] with the following amended paragraph:

[0004] ~~Advantages of the Invention~~

#### **SUMMARY AND ADVANTAGES OF THE INVENTION**

Please replace paragraph [0005] with the following amended paragraph:

[0005] The fluid pump according to the present invention~~[[,]] with the characterizing features of claim 1~~, has the advantage over the prior art that, in addition to limiting the delivery pressure, it also regulates the delivery quantity so that the delivery quantity is fixed regardless of the degree to which the filter is soiled. This is achieved simply in that the force

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exerted on the valve piston in the closing direction is varied as a function of the pressure prevailing downstream of the filter.

Please replace paragraph [0006] with the following amended paragraph:

[0006] Advantageous embodiments and modifications of the fluid pump according to the present invention are disclosed ~~in the dependent claims~~. The embodiment according to ~~claim 2~~ **one embodiment** achieves the function of delivery quantity regulation in a simple manner, **while another** ~~[[.]] The embodiment according to claim 5~~ permits a simple design of the pressure limiting valve. ~~The embodiment~~ **Other embodiments** ~~according to claim 6 provides~~ **provide** a simple design of the connecting conduit, **and allow** ~~[[.]] The embodiment according to claim 9~~ allows the delivery medium to be displaced from the chamber or to flow into it as the valve piston moves in the bore.

Page 3, please replace paragraph [0007] with the following amended paragraph:

[0007] ~~Drawings~~ **BRIEF DESCRIPTION OF THE DRAWINGS**

Please replace paragraph [0008] with the following amended paragraph:

[0008] An exemplary embodiment of the present invention is ~~shown in the drawings and will be explained in detail in the subsequent description~~. **described more fully herein below, with reference to the drawings, in which:**

Please replace paragraph [0012] with the following amended paragraph:

[0012] ~~Description of the Exemplary Embodiment~~

**DESCRIPTION OF THE PREFERRED EMBODIMENT**

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Please replace paragraph [0013] with the following amended paragraph:

[0013] A fluid pump depicted in Figs. 1 through 3 is embodied in the form of a gear pump and is positioned in a supply line, not shown, from a reservoir to a high-pressure fuel pump or fuel injection pump of a fuel injection apparatus of an internal combustion engine, for example ~~belonging to~~ **the engine of** a motor vehicle. The internal combustion engine ~~[[is]]~~ **may be** an autoignition engine and the fuel delivered by the gear pump ~~[[is]]~~ **may be** diesel fuel. The gear pump has a multipart housing that includes a housing **body or** part 10 and a cover part 12. Between the housing part 10 and the cover part 12, there is a pump chamber 14 that contains a pair of gears 16, 18 that mesh with each other along their outer circumferences. To form the pump chamber 14, the housing part 10 has two recesses 20, 22, each with a respective journal 24, 26 protruding from its bottom. The journals 24, 26 are of one piece with the housing part 10 and extend at least approximately parallel to each other. In order to reduce the weight of the housing part 10, the journals 24, 26 can be embodied as at least partially hollow. The gear 16 has a bore 17 by means of which it is supported on the journal 24 in rotary fashion. The gear 18 has a bore 19 by means of which it is supported on the journal 26 in rotary fashion. The journals 24, 26 each define a rotation axis 25, 27 for the respective gears 16, 18. The cover part 12 is attached to the housing part 10, for example by means of a number of screws, **not shown**. The housing part 10 and the cover part 12 are preferably comprised of light metal, in particular aluminum. The gears 16, 18 are preferably comprised of steel, in particular sintered steel.

Page 9, please replace paragraph [0021] with the following amended paragraph:

[0021] The gear pump is preceded in the fuel line by a filter 82 embodied in the form of a prefilter through which the fuel aspirated from the reservoir by the gear pump flows. The gear pump is also followed in the fuel line by an additional filter 83 embodied in the form of a fine filter through which the fuel delivered by the gear pump flows to the high-pressure fuel pump for the fuel injection pump. It is also possible for the pump to be provided only with the prefilter 82 upstream of the gear pump and not the fine filter. For example on the side of the housing part 10 oriented away from the cover part 12, the gear pump has an additional housing part 84 that has a recess oriented toward the housing part 10 in which a pressure chamber 85 is provided. The pressure chamber 85 is connected to a region downstream of the fine filter 83 so that the same pressure prevails in the pressure chamber ~~[[83]]~~ 85 as downstream of the fine filter 83. When only the prefilter 82 is provided, then the pressure chamber 85 is connected to a region downstream of the prefilter 82 so that the same pressure prevails in the pressure chamber 85 as downstream of the prefilter 82 and upstream of the gear pump.

Page 11, please add the following new paragraph after paragraph [0023]:

[0024] The foregoing relates to preferred exemplary embodiments of the invention, it being understood that other variants and embodiments thereof are possible within the spirit and scope of the invention, the latter being defined by the appended claims.